later 12.4 mg per 24-hr period. HPG excretion per 24-hr period before and after was 1.1 mg and 0.6 mg, respectively.

In summary, treatment with the testosterone antagonist cyproterone acetate resulted in a speedy extinction of libido, potency was greatly reduced, and spermiogenesis was extensively inhibited. As no indications of feminization could be observed, cyproterone acetate can be a valuable form of treatment for the sexual offender.

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Male Transsexualism: An Endocrine Study[3]

M. Philbert[4]

A 22-year-old male is reported who gives the typical life history of a male-to-female transsexual. From early childhood he avoided the company of boys and refused to share in their games. At puberty he experienced several episodes of depression and was treated for 2 years at the Infantile Psychiatric Clinic at the Salpetrière. During adolescence his manner became increasingly feminine. Crises of depression and anxiety continued. He refused to participate in homosexual acts. Attaining adulthood, he demanded and received sex-reassignment surgery with testicular castration, penectomy, and the creation of a vagina. Psychologically, the patient showed considerable improvement and under the influence of estrogenic therapy gradually developed female secondary sex characteristics. Sexual intercourse with males, initially painful, subsequently became more satisfactory.

A number of somatic studies were performed on the patient prior to sex-change surgery. Primary and secondary sex characteristics appeared to be those of a normal male. Buccal smear was of the male type. 17-Ketosteroid secretion was at the low normal for young males. Gonadotropin secretion was within normal limits.

A study of testosterone metabolism was performed in detail, including determination of testosterone bound to protein, plasma testosterone levels, and metabolic clearance. These studies showed many metabolic features closer to that of normal

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females than males. At first glance these data lead to the belief that there might be a hormonal basis for the patient's transsexualism. However, subsequent investigation revealed the results were due to clandestine estrogen therapy by the patient. Hormonal studies made 1 and 2 months following castration, when no hormones were being taken, revealed protein affinity for testosterone at the normal male level with plasma testosterone down in consequence of castration.

Thus, normality of the endocrine morphology can only be observed in the total absence of hormonal therapy. Clandestine hormonal treatment can upset the normal hormonal profile for several months following administration. Tests should not be performed for at least 3 months after exogenous hormone intake. Even then it is wise to do a sperm count and test of FSH to demonstrate the absence of any inhibiting influence on endocrine function. Hormonal self-administration is frequently steadfastly denied by the patient.

Under estrogen administration plasma testosterone levels fall to those of a normal female while some androgens derived from the adrenal remain relatively normal. The catabolic pathway of testosterone is also affected with conversion levels of testosterone to androstane-diol and etiocholane-diol falling below values for normal women. Estrogen therapy appears to cause a marked reduction in androgenicity due to several factors: decrease of testosterone secretion secondary to luteining hormone hypophyseal inhibition, increase in carrying proteins of testosterone, decrease in levels of free circulating plasma testosterone, and transformation of testosterone into a weaker androgen, Δ4-androstene-dione.

There is a considerable body of research data indicating the importance of prenatal and early neonatal sex steroid levels on sexual differentiation of the central nervous system. Depriving the developing male of androgen allows for later expression of female-type behavior during adulthood. Female hormones neonatally do not appear to be necessary for the later expression of feminine behavior. The early life period during which this hormonal influence operates could explain why transsexualism does not respond to high doses of hormone (e.g., male hormone to a male transsexual) during adulthood. Female psychosexual differentiation in transsexualism could be a passive spontaneous phenomenon due to the early relative lack of the masculinizing principle —testosterone. If there exist different sensitivity thresholds of the various androgen receptors—gonads, genitalia, nervous structures—it is plausible that, in certain cases, male hormone induction responsible for the male anatomic orientation might be incapable of maturing the central nervous structures toward the male direction. Because the female model is potentially dominant, this may explain the prevalence of male-to-female transsexuals over the phenomenon of female-to-male transsexualism, variously reported to be from 3:1 to 6:1. With further research it may be possible to show an organic link in the genesis of transsexualism allowing for a legal and medical attitude such as seen in cases of hermaphroditism.

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